there has been some information in the literature about the use of clickers in formative assessment, such as testing students' understanding during a didactic lecture, and some information about using clickers for graded tests, there is little information about the use of clickers in a post-test review (Fies & Marhall, 2006; Kay & LeSage, 2009).

Clickers have been successfully used in an undergraduate nursing class post-test review. At the completion of the test and collection of answer sheets, faculty conducted a post-test review of the test using clickers. Each question was viewed on the overhead screen, and students used the clickers to indicate the correct answer. If the question was difficult and students were unable to discriminate the correct answer, faculty promoted student-student interaction to discuss the answers, and then re-polled the class. Faculty were also able to discuss test-taking strategies based on the immediate feedback of the student's clicker responses.

Future Implications

Students were positive about the experience, stating they appreciated the immediate feedback, the interpersonal interactions with each other and the test-taking strategies shared. The clickers allowed them to anonymously respond to the question and anticipate their grade for the exam. Further exploration of the use of clickers in a post-test review is indicated.

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Fostering e-learning discourse among professional networking groups

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Framework

Many instructors struggle to foster worthwhile discussions in on-line courses. We have refined a strategy that fosters extended discourse around the big ideas of a course while maintaining a reasonable workload for faculty and students. We refined this method in graduate-level courses on Learning Theory and on Educational Assessment with class sizes ranging from 15 to 40 students. The method does not use a discussion forum. Rather, the discussion takes place as comments placed directly on student-generated wikifolios. The method is structured to discourage initial discussion of concepts in the abstract. Instead, students discuss how course concepts take on different meaning in different contexts. This strategy should work in any e-learning setting where students are able to post wikis and make comments directly on those posts. This feature is available in the Sakai open-source course management system and in many commercial e-learning platforms.

Making it Work

First, each student posts an entry to their wikifolio that defines a personally meaningful context for applying big ideas of the course. The context needs to be specific enough to reveal differences in the relevance of specific course concepts, but general enough to consider most (but not all) course concepts. In our courses, this is an instructional goal. Our students are also asked to describe their institutional status (e.g., pre-service vs. in-service, teacher, administrator, or researcher).

As students are posting their entries, the instructor sets the tone for the discussion with comments pointing out how contexts and roles might intersect with course content. For example, in the learning class, primary teachers are warned that metacognition does not emerge until the later grades; students in the assessment class are warned that portfolio assessment is easier in some domains (English) than others (math). During this time, the instructor also introduces a strategy that builds community and saves time. Rather than posting similar detailed comments across multiple wikifolios, the instructor encourages students to read and comment on more detailed comments posted previously on other students' wikifolios that will be relevant.

Next, the instructor uses the wiki posts to organize the class into networking groups of a manageable size (i.e., 3–6). In our case, students are assigned to a primary networking group based on their educational domain (literacy, comprehension, writing, math, or science) and a secondary networking group based on their current or future role (teacher, administrator, or researcher).

The weekly routine is based on a strategy that follows from contemporary situative theories of learning. Students post a weekly page to their wikifolio that articulates which of the "big ideas" and "specifics" of the textbook chapter are more relevant and less relevant to their instructional problems and roles. Like most textbooks, ours include summaries of the key implications of each chapter. The process of identifying the most relevant and least relevant topics of a chapter for a personally relevant goal provides a good functional context for reading the chapter. It also provides a good framework for helping students discuss that chapter. Somewhat surprising, asking students to articulate the single big idea of the chapter that is least relevant to them is very helpful for getting students to read and discuss all of the big ideas in a given chapter. Classmates quite naturally come up with ways that the "least relevant" implication is relevant. We know that the method fosters learning, because we sometimes see students change their ranking based on comments; we encourage more of this disciplined discourse by adding comments to the discussion threads that acknowledge both the comment and the modification.

The assignments and instructor comments continually encourage each student to practice projecting a unique professional identity in their wikifolios, comments, and threaded discussions. This scaffolds increasingly sophisticated engagement around their own problem while fostering participation in discourse beyond their problem and their domain. Assignments include specific steps that encourage students to find similarities within their group, and to contrast differences across groups.

In order for this strategy to work, it is important to not directly grade student comments. Our strategy is inspired by the user-generated content in typical digital social networks. "Lurking" is actively encouraged in the syllabus, the assignments, and the course grading structure. The wikifolio contents and comments are never directly graded; rather points towards the course grade are assigned to brief reflections on each wikifolio entry asking the students to summarize three types of engagement. Consequential engagement concerns the consequences of the big ideas for specific instructional contexts and educational roles; critical engagement considers which contexts and roles are best for considering the big ideas of the week; collaborative engagement concerns the discussions they engaged in during the week.

As the course progresses, one or two students typically emerge as discussion leaders within each group. The leaders typically represent the group when interacting with the other groups and the instructor uses their wikifolios strategically to advance the level of discourse within each group. Relatively extensive instructor commentary on the leaders' wikifolios provides highly contextualized guidance that is immediately useful for the entire group. This avoids exhausting and repetitive individualized feedback, and provides a safe space for all students to engage in the discourse at whatever level they find comfortable. This structure has made it possible to bring in challenging assignments that previously could only be managed in the advanced face-to-face class. The structure works because less-experienced students are able to view the posts and instructor comments of the more-experienced students.

Future Implications

So far, the results are quite promising. In the most recent classes, all of the students successfully completed all of the assignments, including the aforementioned challenging ones. In the most recent learning class, weekly wikifolios averaged 1,580 words. The sixteen students posted 997 comments, while the instructor only posted 50. The average student comment length was 120 words, ranging as long as 730 words. Over half were part of threaded discussions, and very few were isolated comments made merely for the sake of commenting. Out of sixteen students, all but one collaborated across professional networking groups at least once.

Accountability for broader course coverage is assessed with formal examination using multiple choice and short answer items from the textbook item bank. To provide reasonable accountability in the online format, the exam was timed, and the items were randomly selected from the subset of items whose answers could not readily be looked up in the textbook. Exam scores are currently averaging around 90% with the lowest scores falling around 70%. Course evaluations are now consistently positive and much more so than are typically obtained in online courses.

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